







	20 in numerals and words.			<ul> <li>that involve all of the above and with increasingly large positive numbers</li> <li>read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.</li> </ul>	<ul> <li>that involve all of the above</li> <li>read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</li> </ul>	
		Number – Additio	on and Subtraction			Number – Addition, Subtraction, Multiplication and
Children at the	Pupils should be	Pupils should be	Pupils should be	Pupils should be	Pupils should be	Division Pupils should be
expected level of	taught to:	taught to:	taught to:	taught to:	taught to:	taught to:
development will:	<ul> <li>read, write and</li> </ul>	<ul> <li>solve problems</li> </ul>	<ul> <li>add and subtract</li> </ul>	<ul> <li>add and subtract</li> </ul>	<ul> <li>add and subtract</li> </ul>	<ul> <li>multiply multi-</li> </ul>
Verbally count	interpret	with addition and	numbers mentally,	numbers with up	whole numbers	digit numbers up
beyond 20,	mathematical	subtraction:	including:	to 4 digits using	with more than 4	to 4 digits by a
recognising the	statements	<ul> <li>using concrete</li> </ul>	<ul> <li>a three-digit</li> </ul>	the formal written	digits, including	two-digit whole
pattern of the	involving addition	objects and	number and ones	methods of	using formal	number using
counting system;	(+), subtraction (–)	pictorial	<ul> <li>a three-digit</li> </ul>	columnar addition	written methods	the formal
Compare	and equals (=)	representations,	number and tens	and subtraction	(columnar	written method
quantities up to 10 in different	signs	including those involving	<ul> <li>a three-digit</li> <li>number and</li> </ul>	where appropriate	addition and subtraction)	of long
contexts,	<ul> <li>represent and use number bonds</li> </ul>	numbers,	hundreds	<ul> <li>estimate and use inverse operations</li> </ul>	<ul> <li>add and subtract</li> </ul>	<ul><li>multiplication</li><li>divide numbers</li></ul>
recognising when	and related	quantities and	<ul> <li>add and subtract</li> </ul>	to check answers	numbers mentally	up to 4 digits by
one quantity is	subtraction facts	measures	numbers with up	to a calculation	with increasingly	a two-digit
greater than, less	within 20	<ul> <li>applying their</li> </ul>	to three digits,	<ul> <li>solve addition and</li> </ul>	large numbers	whole number
than or the same	<ul> <li>add and subtract</li> </ul>	increasing	using formal	subtraction two-	<ul> <li>use rounding to</li> </ul>	using the formal
as the other	one-digit and two-	knowledge of	written methods	step problems in	check answers to	written method
quantity;			of columnar	contexts, deciding	calculations and	of long division,





• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally	<ul> <li>digit numbers to 20, including zero</li> <li>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = -9.</li> </ul>	• • • • •	mental and written methods recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one- digit numbers show that addition of two numbers	•	addition and subtraction estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	which operations and methods to use and why.	•	determine, in the context of a problem, levels of accuracy solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why.	•	and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context perform mental calculations, including with mixed operations and
	-		pictorial		facts, place value,					the formal
			•		•					of short division
			including:		subtraction.					where
		0	a two-digit							appropriate,
			number and ones							interpreting
		0	a two-digit							remainders
										according to the
		0	two two-digit							context
									٠	perform mental
		0	-							
			•							including with
		•								
										•
			can be done in any							large numbers
			order						٠	identify common
			(commutative)							factors, common
		1	and subtraction of							multiples and
			one number from							prime numbers
		1	another cannot						٠	use their
		•	recognise and use							knowledge of
		1	the inverse							the order of
		1	relationship							operations to
		1	between addition							carry out
			and subtraction							





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	and use this to check calculations				calculations involving the
	and solve missing				four operations
	number problems.				<ul> <li>solve addition</li> </ul>
					and subtraction
	Number – Multipli	cation and Division			multi-step
Pupils should be	Pupils should be	Pupils should be	Pupils should be	Pupils should be	problems in
taught to:	taught to:	taught to:	taught to:	taught to:	contexts,
solve one-step	<ul> <li>recall and use</li> </ul>	<ul> <li>recall and use</li> </ul>	<ul> <li>recall</li> </ul>	<ul> <li>identify multiples</li> </ul>	deciding which
problems	multiplication and	multiplication and	multiplication and	and factors,	operations and
involving	division facts for	division facts for	division facts for	including finding	methods to use
multiplication and	the 2, 5 and 10	the 3, 4 and 8	multiplication	all factor pairs of a	and why
division, by	multiplication	multiplication	tables up to 12 ×	number, and	solve problems
calculating the	tables, including	tables	12	common factors	involving
answer using	recognising odd	write and	• use place value,	of two numbers	addition,
concrete objects,	and even numbers	calculate	known and	know and use the	subtraction,
pictorial	calculate	mathematical	derived facts to	vocabulary of	multiplication
representations	mathematical	statements for	multiply and	prime numbers,	and division
and arrays with	statements for multiplication and	multiplication and	divide mentally,	prime factors and	<ul> <li>use estimation</li> </ul>
the support of the teacher.	division within the	division using the	including:	composite	to check answers
teacher.	multiplication	multiplication tables that they	multiplying by 0	(nonprime)	to calculations
	tables and write	know, including	and 1; dividing by	numbers	and determine,
	them using the	for two-digit	1; multiplying together three	establish whether	in the context of a problem, an
	multiplication (×),	numbers times	numbers	a number up to	appropriate
	division (÷) and	one-digit	<ul> <li>recognise and use</li> </ul>	100 is prime and	degree of
	equals (=) signs	numbers, using	factor pairs and	recall prime numbers up to 19	accuracy.
	<ul> <li>show that</li> </ul>	mental and	commutativity in	<ul> <li>multiply numbers</li> </ul>	accuracy.
	multiplication of	progressing to	mental	• multiply numbers up to 4 digits by a	
	two numbers can	formal written	calculations	one- or two-digit	
	be done in any	methods	<ul> <li>multiply two-digit</li> </ul>	number using a	
	order	<ul> <li>solve problems,</li> </ul>	and three-digit	formal written	
	(commutative)	including missing	numbers by a one-	method, including	
	and division of	number problems,	digit number using	long multiplication	
	one number by	involving	formal written	for two-digit	
	another cannot	multiplication and	layout	numbers	
		division, including	,		
	1	<b>.</b>	1	1	1





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		<ul> <li>solve problems</li> </ul>	positive integer	•	solve problems	•	multiply and	
		involving	scaling problems		involving		divide numbers	
		multiplication and	and		multiplying and		mentally drawing	
		division, using	correspondence		adding, including		upon known facts	
		materials, arrays,	problems in which		using the	٠	divide numbers up	
		repeated addition,	n objects are		distributive law to		to 4 digits by a	
		mental methods,	connected to m		multiply two digit		one-digit number	
		and multiplication	objects.		numbers by one		using the formal	
		and division facts,			digit, integer		written method of	
		including			scaling problems		short division and	
		problems in			and harder		interpret	
		contexts.			correspondence		remainders	
					problems such as		appropriately for	
					n objects are		the context	
					connected to m	•	multiply and	
					objects.		divide whole	
							numbers and	
							those involving	
							decimals by 10,	
							100 and 1000	
						•	recognise and use	
							square numbers	
							and cube	
							numbers, and the	
							notation for	
							squared and	
							cubed	
						•	solve problems	
							involving	
							multiplication and	
							division including	
							using their	
							knowledge of	
							factors and	
							multiples, squares	
							and cubes	
		1		1				—





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					<ul> <li>solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> <li>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</li> </ul>	
		Number – Fra	actions, Decimals and F	Percentages		
	Pupils should be	Pupils should be	Pupils should be	Pupils should be	Pupils should be	Pupils should be
	taught to:	taught to:	taught to:	taught to:	taught to:	taught to:
	<ul> <li>recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>	<ul> <li>recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity</li> <li>write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.</li> </ul>	<ul> <li>count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10</li> <li>recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions</li> </ul>	<ul> <li>recognise and show, using diagrams, families of common equivalent fractions</li> <li>count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and</li> </ul>	<ul> <li>compare and order fractions whose denominators are all multiples of the same number</li> <li>identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> </ul>	<ul> <li>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>compare and order fractions, including fractions &gt; 1</li> <li>add and subtract fractions with</li> </ul>





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	with small		dividing tenths by	•	recognise mixed		different
	denominators		ten.		numbers and		denominators
•	recognise and use	•	solve problems		improper fractions		and mixed
	fractions as		involving		and convert from		numbers, using
	numbers: unit		increasingly		one form to the		the concept of
	fractions and non-		harder fractions to		other and write		equivalent
	unit fractions with		calculate		mathematical		fractions
	small		quantities, and		statements > 1 as	•	multiply simple
	denominators		fractions to divide		a mixed number		pairs of proper
•	recognise and		quantities,		[for example, 5 2 +		fractions, writing
	show, using		including non-unit		54=56=151]		the answer in its
	diagrams,		fractions where	•	add and subtract		simplest form
	equivalent		the answer is a		fractions with the		[for example,
	fractions with		whole number		same		$1/4 \times 1/2 = 1/8$ ]
	small	•	add and subtract		denominator and	•	divide proper
	denominators		fractions with the		denominators that		fractions by
•	add and subtract		same		are multiples of		, whole numbers
	fractions with the		denominator		the same number		[for example,
	same	•	recognise and	•	multiply proper		$1/3 \div 2 = 1/6$ ]
	denominator		write decimal		fractions and	•	associate a
	within one whole		equivalents of any		mixed numbers by		fraction with
	[for example, 5/7		number of tenths		whole numbers,		division and
	+ 1/7 = 6/7]		or hundredths		supported by		calculate decimal
•	compare and	•	recognise and		materials and		fraction
	order unit		write decimal		diagrams		equivalents [for
	fractions, and		equivalents to 1/4,	•	read and write		example, 0.375]
	fractions with the		1/2 and 3/4		decimal numbers		for a simple
	same	•	find the effect of		as fractions [for		fraction [for
	denominators		dividing a one- or		example, 0.71 =		example, 3/8]
•	solve problems		two-digit number		71/100]	•	identify the
-	that involve all of		by 10 and 100,	•	recognise and use		value of each
	the above.		identifying the	-	thousandths and		digit in numbers
			value of the digits		relate them to		given to three
			in the answer as		tenths,		decimal places
			ones, tenths and		hundredths and		and multiply and
			hundredths		decimal		divide numbers
			nanarcatio		equivalents		by 10, 100 and
I		1			equivalents		s, 10, 100 and





two decimal places.       • recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and werite percentages as a fraction with denominator 100, and as a decimal       • recognise the per cent symbol (%) and understand that per cent specified degrees of accuracy as a fraction with denominator 100, and as a decimal       • solve problems which require equivalences between simple solve problems which require knowing percentage and decimal decimal decimal fractions, which require fractions with a denominator of a
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<ul> <li>capacity and volume</li> <li>time (hours, minutes, seconds)</li> <li>recognise and know the value of different denominations of coins and notes</li> <li>sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</li> <li>recognise and use language relating to dates, including days of the week, weeks, months and years</li> <li>tell the time to the hour and half past the hour and draw the hands on a clock face to show</li> </ul>	<ul> <li>find different combinations of coins that equal the same amounts of money</li> <li>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</li> <li>compare and sequence intervals of time</li> <li>tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times</li> <li>know the number of minutes in an hour and the number of hours in a day.</li> </ul>	<ul> <li>minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight</li> <li>know the number of seconds in a minute and the number of days in each month, year and leap year</li> <li>compare durations of events [for example to calculate the time taken by particular events or tasks].</li> </ul>		standard units, square centimetres (cm2 ) and square metres (m2 ) and estimate the area of irregular shapes estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] solve problems involving converting between units of time use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	<ul> <li>same areas can have different perimeters and vice versa</li> <li>recognise when it is possible to use formulae for area and volume of shapes</li> <li>calculate the area of parallelograms and triangles</li> <li>calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].</li> </ul>
these times.					
	Geom	netry – Properties of Sh	ape		
Pupils should be	Pupils should be	Pupils should be	Pupils should be	Pupils should be	Pupils should be
taught to:	taught to:	taught to:	taught to:	taught to:	taught to:





					•
<ul> <li>recognise and name common 2- D and 3-D shapes, including:</li> <li>2-D shapes [for example, rectangles (including squares), circles and triangles]</li> <li>3-D shapes [for example, cuboids (including cubes), pyramids and spheres].</li> </ul>	<ul> <li>identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</li> <li>compare and sort common 2-D and 3-D shapes and everyday objects.</li> </ul>	<ul> <li>draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</li> <li>recognise angles as a property of shape or a description of a turn</li> <li>identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle</li> <li>identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</li> </ul>	<ul> <li>compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</li> <li>identify acute and obtuse angles and compare and order angles up to two right angles by size</li> <li>identify lines of symmetry in 2-D shapes presented in different orientations</li> <li>complete a simple symmetric figure with respect to a specific line of symmetry.</li> </ul>	<ul> <li>identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>draw given angles, and measure them in degrees</li> <li>identify:         <ul> <li>angles at a point and one whole turn (total 360 degrees)</li> <li>angles at a point on a straight line and 1/2 a turn (total 180 degrees)</li> <li>other multiples of 90 degrees</li> <li>use the properties of rectangles to deduce related facts and find missing lengths and angles</li> <li>distinguish between regular and irregular polygons based on reasoning about</li> </ul> </li> </ul>	<ul> <li>draw 2-D shapes using given dimensions and angles</li> <li>recognise, describe and build simple 3-D shapes, including making nets</li> <li>compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> <li>recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and</li> </ul>





					equal sides and angles.	find missing angles.
		Geome	etry – Position and Dire	ction		
taugh • d d m ir h t		Pupils should be caught to: order and arrange combinations of mathematical objects in patterns and sequences use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three- quarter turns (clockwise and anticlockwise).		<ul> <li>Pupils should be taught to:</li> <li>describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>describe movements between positions as translations of a given unit to the left/right and up/down</li> <li>plot specified points and draw sides to complete a given polygon.</li> </ul>	Pupils should be taught to: • identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	<ul> <li>Pupils should be taught to:</li> <li>describe positions on the full coordinate grid (all four quadrants)</li> <li>draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> </ul>
	I		Statistics			
		Pupils should be caught to: interpret and construct simple pictograms, tally charts, block diagrams and simple tables	<ul> <li>Pupils should be taught to:</li> <li>interpret and present data using bar charts, pictograms and tables</li> <li>solve one-step and two-step</li> </ul>	<ul> <li>Pupils should be taught to:</li> <li>interpret and present discrete and continuous data using appropriate graphical methods,</li> </ul>	<ul> <li>Pupils should be taught to:</li> <li>solve comparison, sum and difference problems using information presented in a line graph</li> </ul>	<ul> <li>Pupils should be taught to:</li> <li>interpret and construct pie charts and line graphs and use these to solve problems</li> </ul>





<ul> <li>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>ask and answer questions about totalling and comparing categorical data.</li> </ul>	questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	<ul> <li>including bar charts and time graphs</li> <li>solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</li> </ul>	<ul> <li>complete, read and interpret information in tables, including timetables.</li> </ul>	<ul> <li>calculate and interpret the mean as an average.</li> </ul>
	<b>Ratio and Proportion</b>			
				<ul> <li>Pupils should be taught to:</li> <li>solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</li> <li>solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</li> </ul>





		•	involving similar shapes where the scale factor is known or can be found
	Algebra		- ·
		t	describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two unknowns



